APPENDIX L. USE OF HEPA FILTER WITH IMPACT 754M VENTILATOR

This Appendix to SB 8-75-S2 is regarding the failure of the IMPACT 754M portable ventilator during use of the internal compressor. Operating the ventilator in a dirty or contaminated environment may hinder the performance of the internal compressor leading to premature failure. IMPACT Instrumentation, Inc., has a HEPA filter that can be used to alleviate or remedy this situation. Portions of information used in the following paragraphs are consistent with information provided by the Centers of Disease Control, www.cdc.gov .

1. HEPA filters are regarded as the best form of air filtration devices available today. HEPA stands for High-Efficiency Particulate Arrestance. According to U.S. Military Standard MIL-STD-282, HEPA filters are defined as air-cleaning devices that have a proven minimum removal efficiency of 99.97% of particles in the air equal to 0.3 um (microns) in diameter with higher efficiency for both larger and smaller particle sizes. The reason 0.3 microns is used in the definition is because it's the particle size in which all mechanical filters are LEAST efficient in capturing and removing from the air. A micron is a measure of length: 1 micron equals 1 millionth of a meter. A particle size of 10 microns or less is not visible to the naked eye.

2. The Uni-Vent® Eagle™ Model 754 comes equipped with an internal compressor. The compressor is a mechanical component that generates air pressure for ventilation. Pressure is needed to deliver a volume of gas to the patient. In order for the compressor to operate, it needs to entrain air from the atmosphere. The Eagle's™ air entrainment port does not come with a HEPA filter installed. When the ventilator is operated in a clean environment like a hospital, a HEPA filter covering the air-entrainment port is generally not needed. It is highly recommended that when the ventilator is operated in environments where it is exposed to higher than normal levels of airborne contaminants that a HEPA filter be installed. The HEPA filter will help protect the inside of the ventilator from contamination and prolong the life of the internal components by preventing the build up of foreign matter like dust and dirt.

3. Use of a HEPA filter will also help protect the patient's airway from exposure to this foreign particulate matter. Undesirable contaminants that the HEPA filter will help block include: smoke, mold, hair, dust, dirt, pet dander, bacteria, viruses, and fungi. Please note that "HEPA-Type" filters may look like a certified HEPA filter; however, their performance may not match that of a true HEPA filter. No filter, including a true HEPA filter, can trap 100% of all contaminants. However, in terms of efficiency and performance, HEPA filters are the highest performing air filtration devices currently available. HEPA filters should ALWAYS be used in situations where the ventilator must be operated in contaminated environments. Two additional features of HEPA filters that add to their value is that unless the air entering the filter is humidified, bacteria and viruses that are trapped in the filter will dry out and die. The second feature is that the filter becomes more efficient over time because as the filter gets filled with trapped particles, it becomes more difficult for matter to pass through the filter. Depending on use and level of contaminate exposure, HEPA filters, like a regular filter need to be changed based on the manufacturer's recommendation.